A/51/46

United Nations

Report of the United Nations Scientific Committee on the Effects of Atomic Radiation

General Assembly

Official Records • Fifty-first Session
Supplement No. 46 (A/51/46)

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United Nations • New York, 1996

NOTE

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ISSN 0255-1373

[Original: English]

[1 October 1996]

1. During the last few years, the United Nations Scientific Committee on the Effects of Atomic Radiation 1/ has undertaken a broad review of the sources and effects of ionizing radiation. The results of this work have been issued in a series of publications: the 1993 annual report of the Committee, with nine scientific annexes, the 1994 annual report with two scientific annexes, and the present 1996 annual report of the Committee, which contains one scientific annex, "Effects of radiation on the environment". These three publications form a series of reports entitled Sources and Effects of Ionizing Radiation, which together inform the General Assembly and the scientific and world community of the Committee's latest findings and evaluations.

2. The scientific annex of this report (see para. 7) was developed over several annual sessions and completed at the forty-fifth session of the Committee, which was held at the Vienna International Centre from 17 to 21 June 1996, with L. Pinillos Ashton (Peru), Mr. A. Kaul (Germany) and Mr. L.-E. Holm (Sweden) serving as Chairman, Vice-Chairman and Rapporteur, respectively. The names of members of delegations who attended the sessions during which this report was considered are listed in appendix I. The Committee wishes to acknowledge the assistance of a small group of scientists in the preparation of the scientific annex: D. Woodhead (principal consultant), R. M. Alexakhin, B. G. Bennett and A. Bouville, who conducted the reviews of the scientific literature and made the preliminary evaluations on which the final assessment of the Committee is based.

3. The Committee considers in the present report the effects of ionizing radiation on plants and animals in the environment. These effects have not previously been addressed directly by the Committee. The emphasis of past assessments has been on determining the effects of radiation on human health. With the increasing worldwide interest in nurturing the environment and concerns about the possible detrimental effects of radiation, the time is appropriate for the Committee to provide a summary of the effects of radiation on the environment. The information for this summary has been drawn from reported observations in natural and contaminated environments, from experimental studies and from the Committee's own assessments of radio-biological effects. The intention is to provide countries, national and international organizations and the scientific community with a reference text on the effects of radiation on plants and animals in all sectors of the environment.

4. All living organisms have developed and survive in environments subject to a natural radiation background. Global fallout from nuclear weapons tests in the second half of this century has made minor additions to this background. Also, increments in radiation exposures of a more local or regional nature have arisen because of emissions to the atmosphere, water bodies and the ground from the operation of nuclear power facilities, from industrial, medical and defence-related operations and from some accidents. Generally, there have been no apparent effects in plants and animals from these radiation exposures. Following severe accidents, however, damage has been observed in individual organisms and populations.

5. There is a wide range of sensitivities of plants and animals to ionizing radiation. In general, mammals are the most sensitive of the animal species, followed by birds, fish, reptiles and insects. The range of sensitivities of

plants overlaps that of animals. Reproductive capacity, which is particularly important for the maintenance of the population, appears to be the most radiosensitive population attribute. For natural plant and animal communities, there is little evidence that dose rates of 0.1 milligray per hour (i.e. about 1,000 times greater than the natural background) to a small proportion of the individuals (and therefore, a lower average dose rate to the remaining organisms) would have any detrimental effects at the population level.

6. The Committee is proceeding with a new programme of work to evaluate further the sources and effects of ionizing radiation. Recent data on radiation exposures in countries are being collected worldwide in order to determine representative values and ranges of such exposures in human population groups. New information from radio-biological and epidemiological studies is being reviewed, which should improve understanding of the effects of radiation and the underlying risks. During the 41 years of work of the Committee, considerable knowledge has been acquired of radiation sources and of the inevitable and circumstantial exposures that are a part of human life. An understanding of the underlying mechanisms of radiation interactions will improve the assessments of radiation risks. The Committee will continue to direct is efforts towards a broader understanding of ionizing radiation sources and effects.

7. Following established practice, the annual report of the Committee to the General Assembly does not include the scientific annex. The 1996 annual report of the Committee, Sources and Effects of Ionizing Radiation, with the scientific annex "Effects of radiation on the environment", will be issued as a United Nations sales publication in order to achieve wide distribution of the findings for the benefit of the international scientific community.

Notes

1/ The United Nations Scientific Committee on the Effects of Atomic Radiation was established by the General Assembly at its tenth session, in 1955. Its terms of reference are set out in General Assembly resolution 913 (X) of 3 December 1955. The Committee was originally composed of the following Member States: Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, Egypt, France, India, Japan, Mexico, Sweden, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland and United States of America. The membership was subsequently enlarged by the General Assembly in its resolution 3154 C (XXVIII) of 14 December 1973 to include the Federal Republic of Germany, Indonesia, Peru, Poland and the Sudan. By its resolution 41/62 B of 3 December 1986, the Assembly increased the membership of the Committee to a maximum of 21 members and invited China to become a member.

APPENDIX

Members of national delegations attending the thirty-eighth to forty-fifth sessions

ARGENTINA	D. Beninson (representative), E. d'Amato, C. Arias, D. Cancio, A. Curti, E. Palacios
AUSTRALIA	K. H. Lokan (representative), Dr. J. Bonnyman
BELGIUM	J. Maisin (representative), P. Govaerts, R. Kirchmann, H. P. Leenhouts, P. H. M. Lohman, K. Sankaranarayanan, D. Smeesters, H. Vanmarke, A. Wambersic
BRAZIL	J. Lipsztein (representative), E. Penna France (representative), A. R. Oliveira, A. Ramalho
CANADA	R. V. Osborne (representative), R. M. Chatterjee (representative), E. G. Létourneau (representative), A. Arsenault, D. R. Champ, P. J. Duport, V. Elaguppilai, N. E. Gentner, K. L. Gordon, B. C. Lentle, D. K. Myers, S. Vlahovich
CHINA	Pan Ziqiang (representative), Wei Kedao (representative), Li Deping (representative), Liu Hongxiang (representative), Wei Luxin (representative), Guo Jidong, Leng Ruiping, Tao Zufan, Wu Dechang, Wei Kang
EGYPT	F. H. Hammad (representative), M. F. Ahmed (representative), F. Mohamed (representative), H. M. Roushdy (representative), S. E. Hashish
FRANCE	R. Masse (representative), P. Pellerin (representative), N. Arannou, S. Boiteux, E. Cardis, R. Coulon, H. Dutrillaux, A. Flury-Hérard, H. Jammett, J. Lafuma, J. Lallemand, G. Lemaire, C. Luccioni, J. Piéchowski, A. Rannou
GERMANY a/	A. Kaul (representative), W. Burkart, U. H. Ehling, W. Jacobi, A. M. Kellerer, F. E. Stieve, C. Streffer
INDIA	P. C. Kesavan (representative), D. V. Gopinath (representative), U. Madhvanath (representative), N. K. Notani (representative)
INDONESIA	A. Razak (representative), S. Soekarno (representative), S. Wiryosimin (representative), S. Zahir (representative), T. Suprihadi, K. Wiharto
JAPAN	Y. Hirao (representative), H. Matsudaira (representative), T. Asano, Y. Hosoda, T. Iwasaki, A. Kasai, S. Kumazawa, K. Mabuchi, T. Matsuzaki, K. Morita, K. Nishizawa, H. Noguchi, K. Sato, K. Shinohara, N. Shiomitsu, K. Tatsumi, S. Yano
MEXICO	E. Araico Salazar (representative), S. Ajuria

PERU	L. V. Pinillos Ashton (representative)
POLAND	Z. Jaworowski (representative), H. Dzikiewicz-Sapiccha, J. Jankowski, J. Liniecki, M. Waligórski, O. Rosiek, S. Sterlinski, I. Szumiel
RUSSIAN FEDERATION b/	L. A. Ilyin (representative), R. Alexakhin, A. Bakuniajev, R. M. Barhoudarov, Y. Buldakov, V. Bebeshko, N. A. Dolgova, K. I. Gordeev, A. Guskowa, D. F. Khokhlova, Y. Kholina, E. Komarov, I. S. Koshkin, O. Pavlovski, V. V. Redkin, G. N. Romanov, M. Savkin
SLOVAKIA c/	M. Klimek (representative), D. Viktory (representative), I. Bučina
SUDAN	O. I. Elamin (representative), A. Hidayatalla (representative)
SWEDEN	L. E. Holm (representative), G. Bengtsson (representative), J. O. Snihs, L. Sjöberg, J. Valentin
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	R. H. Clarke (representative), J. Dunster (representative), J. Denekamp, Sir Richard Dell, J. W. Stather
UNITED STATES OF AMERICA	F. A. Mettler (representative), L. R. Anspaugh, J. D. Boice, C. W. Edington, J. H. Harley, N. H. Harley, C. Meinhold, P. B. Selby, W. K. Sinclair, E. W. Webster, H. O. Wyckoff

Notes

a/ At the thirty-eighth and thirty-ninth sessions: Federal Republic of Germany.

b/ At the thirty-eighth, thirty-ninth and fortieth sessions: Union of Soviet Socialist Republics.

c/ At the thirty-eighth, thirty-ninth, fortieth and forty-first sessions: Czechoslovakia.